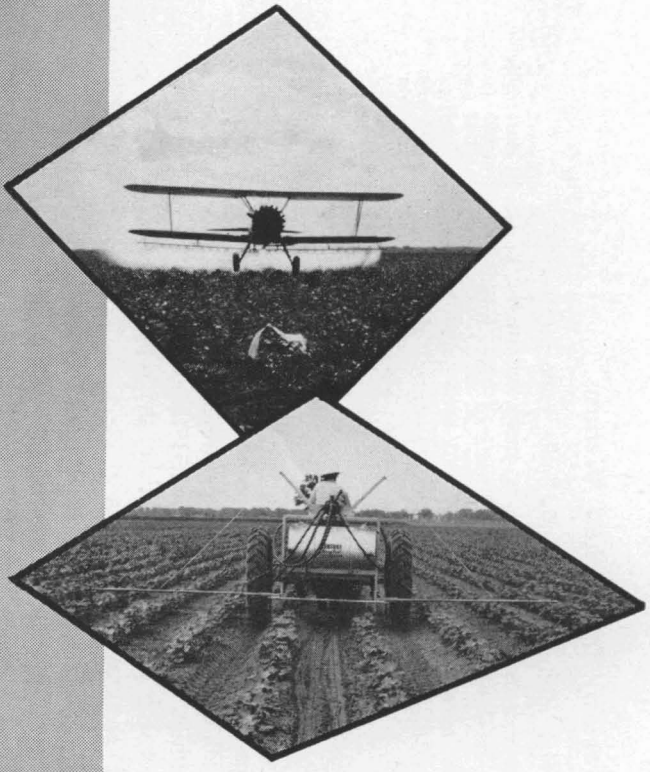
1963 67,000 3/1/63 L-218

Texas Guide

for controlling

Cotton Insects



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THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
TEXAS AGRICULTURAL EXTENSION SERVICE
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TEXAS GUIDE FOR CONTROLLING COTTON INSECTS

COTTON INSECTS can be controlled economically by the use of the proper poisons at the correct time. (See table.) Poisons must cover the plants to kill insects. Plants usually are not protected from insect attack on new growth or if poisons are washed off.

For information on the identification, life history and nature of damage of the major cotton insects, see B-933, *Cotton Insects.*

Substantial profits have been made, even when a large number of poison applications were necessary for maximum yields, by controlling damaging infestations of boll weevils and bollworms on cotton growing on fertile soils. On upland soils where insect infestations do not last long, fewer applications may be needed. The control program for 1963 includes three phases:

1. EARLY SEASON CONTROL (insures early fruiting and maturity in certain areas)
2. LATE SEASON CONTROL (based upon infestation)
3. EARLY STALK DESTRUCTION AND FARM CLEANUP

The grower must carry out an adequate control program to obtain greatest benefits. Cotton should be inspected before applying insecticides to determine the degree of infestation and to check for pests such as aphids and spider mites which may influence the choice of insecticides.

Late season treatment should be applied when infestation counts indicate that they are needed. Cotton growing under irrigation or on other high-yielding land usually requires protection for a longer period than the dryland acreage.

Early Stalk Destruction and Farm Cleanup

Early harvest, immediate stalk destruction and plowing under debris before the first frost reduces boll weevil and pink bollworm populations. These practices force the boll weevil into starvation before time to enter winter quarters, prevent late season buildup of weevils and pink bollworms and reduce the numbers that survive the winter. See L-219, *Ways to Fight the Pink Bollworm in Texas.*

When to Apply Insecticides

Application of insecticides near the time bollworms usually appear may create conditions favorable for these pests to build up in damaging numbers. A well-executed early season program should be employed to control early season pests such as thrips, overwintered boll weevils and fleahoppers when needed.

Beneficial insects may aid in controlling cotton pests such as the bollworm, cotton aphid and spider mite. *Growers never should rely entirely on beneficial insects to control cotton insects,* but should examine their fields frequently to determine the need for insecticides.

PINK BOLLWORM

Pink bollworm counts should begin after cotton has been blooming for at least five days. Select five representative locations in the field, step off 300 feet of row and count the number of rosetted blooms. Add the total number of rosetted blooms from these five locations and multiply by 10 to obtain the number of worms per acre. When approximately 350 or more worms per acre are found, begin treatment immediately.

When less than 350 worms per acre are found, make boll inspections as soon as first bolls are 4 weeks old and continue at weekly intervals. Walk diagonally across the field and collect at least 100 bolls (two-thirds grown or larger). Crack the bolls and examine the inside of the hull for tunnels made by small worms. Start treatment when 10 to 15 percent of the bolls are infested and continue until 70 percent are open.

INSECTICIDES SHOULD BE APPLIED AT INTERVALS OF NOT MORE THAN 5 DAYS TO MAINTAIN EFFECTIVE CONTROL OF THE BOLL WEEVIL, BOLLWORM AND PINK BOLLWORM.

Treatment with Systemic Insecticides at Planting Time

Four to 6 weeks protection from planting date can be obtained from thrips, aphids, spider mites and leaf miners with phorate (Thimet) applied to the seed or placed in the furrow in granulated form at planting. One-fourth to ½ pound of the active ingredient per acre may be applied as a seed treatment of ½ to 1 pound per acre in the furrow. Seed may be treated at the rate of 1 to 1½ pounds per 100 pounds of seed to accommodate planting rate. One-half to 1 pound of actual Di-syston applied in granular form at time of planting is also effective. Overdosing with seed treatments may retard early growth especially under weather conditions unfavorable for emergence. Use extreme care in handling treated seed or granules because they are toxic to man. Care should be exercised in using systemic insecticides in conjunction with pre-emergence herbicides.

General Information

In the late season program, dusts and sprays are equally effective when properly applied. Repeat the application as soon as possible if the poison is washed off within 24 hours, except when aphicides are used.

When infestations are extra heavy, increase dosages to the maximum.

For detailed information on the use of sprays and spray machinery, see L-486, *Insecticidal Spraying of Field Crops with Ground Machinery.*

Apply dusts when the air is calm or nearly so. Dew on plants is not necessary. Dusts and wettable powders are washed off more easily by light showers than sprays. Place dust nozzles on ground machines 4 to 6 inches above the plants.

Ground machines and airplanes are equally effective for applying poisons. For best results with airplanes, flag the swaths so that they overlap. Increase dosages recommended in this guide by at least 50 percent when an airplane is used in making early season applications. Apply aerial spray at 2 to 2½ gallons per acre except in West Texas and the lower Rio Grande Valley where 3 or 4 gallons per acre should be used.

Some poisons are particularly destructive to honeybees. A determined effort should be made to prevent their destruction, since bees help pollinate many agricultural crops.

A supplemental guide for the High Plains and Trans-Pecos areas is available.

The recommendations in the Guide are based upon results of experiments conducted by the Texas Agricultural Experiment Station of the A&M College of Texas and the Entomology Research Division, United States Department of Agriculture.

For additional information, contact your county agent or write the extension entomologists, College Station, Texas.

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Three-way Insecticidal Mixtures

Commercial mixtures of emulsifiable concentrates containing three insecticides are being marketed in the State. Growers should know the contents of such mixtures and make sure that they are applying recommended dosages of the insecticides required to give control of the pests involved.

Caution

All insecticides are poisonous. Follow carefully all precautions on the label. Take special precautions in handling parathion, endrin, methyl parathion, demeton, Di-syston, Guthion and phorate (Thimet) to avoid prolonged contact with the skin or breathing the vapors or drift from either spray or dust.

Be mindful of insecticidal drift that may contaminate neighboring vegetables or forage crops at the time cotton is sprayed or dusted.

CONVERSION TABLE

Pounds of Actual Insecticide in Different Quantities of Spray Concentrate

Insecticide	Gal.	2 Qt.	1 Qt.	1 Pt.
Aldrin	2.0	1.0	0.5	0.25
DDT	2.0	1.0	0.5	0.25
DDT	3.0	1.5	0.75	0.375
Demeton	2.0	1.0	0.5	0.25
Dieldrin	1.5	0.75	0.375	0.187
Endrin	1.6	0.8	0.4	0.2
Ethion	4.0	2.0	1.0	0.5
Guthion	2.0	1.0	0.5	0.25
Heptachlor	2.0	1.0	0.5	0.25
Malathion	5.0	2.5	1.25	0.675
Methyl parathion	2.0	1.0	0.5	0.25
Methyl parathion	4.0	2.0	1.0	0.5
Methyl Trithion	4.0	2.0	1.0	0.5
Parathion	2.0	1.0	0.5	0.25
Toxaphene	6.0	3.0	1.5	0.75
Trithion	4.0	2.0	1.0	0.5
BHC-DDT	2.4	1.2	0.6	0.3
Strobane-DDT	6.0	3.0	1.5	0.75
Toxaphene-DDT	6.0	3.0	1.5	0.75
		Pounds Actual Sevin		
	3.0	2.0	1.0	0.5
Pounds of Sevin 80% wettable powder required	3.75	2.5	1.25	0.625

EARLY SEASON CONTROL PROGRAM (Insecticides listed at random)

INSECTS	INSECTICIDES	POUNDS PER ACRE OF ACTUAL INSECTICIDES TO BE APPLIED AS SPRAY[1]	REMARKS
Cutworms	A. Toxaphene-DDT (2-1 mixture)[2]	2.0 – 3.0	Examine seedling cotton for presence of these pests. Apply treatment as needed.
	B. Endrin[2]	0.3 – 0.4	
Thrips	A. Dieldrin + DDT[2]	0.2 – 0.25 + 0.5	If thrips are present, make first application soon after plant emergence. However, control may not be needed until the four-leaf stage. Make a second application 7 days after the first.
	B. Guthion[3]	0.125 – 0.25	
	C. Strobane – DDT (2-1 mixture)[2,4]	1.25 – 2.25	
	D. Sevin[5]	0.5 – 1.0	
	E. Toxaphene-DDT (2-1 mixture)	1.25 – 2.25	
	F. Heptachlor + DDT[2,4]	0.25 – 0.375 + 0.5	
	G. Endrin + DDT[2]	0.2 –0.3 + 0.5	
Overwintered boll weevils	A. Sevin	1.25 – 1.5	Make application just before first squares are one-third grown to prevent egg laying. If emergence of more weevils from hibernation sites occur, an additional treatment may be necessary. These insecticides also control thrips and cotton fleahoppers. Guthion, Sevin, Methyl Trithion and methyl parathion produce rapid, effective control of overwintered boll weevils in areas where they are resistant to chlorinated hydrocarbons.
	B. Guthion	0.25	
	C. Methyl parathion[6]	0.25 – 0.375	
	D. Methyl Trithion[2,4]	0.25 – 0.375	
	E. Toxaphene – DDT	2.0 – 3.0	
	F. Strobane – DDT	2.0 – 3.0	
	G. Endrin + DDT	0.3 – 0.4 + 0.5 – 1.0	
Fleahoppers	Apply one of the insecticides recommended for thrips control		Treatment for fleahoppers should be made when infestation counts warrant. Begin treatments when 15 to 35 fleahoppers (nymphs and adults) are found per 100 terminals.
Cotton aphids	A. Malathion	0.625 – 0.9	In early season, apply insecticides as needed. In late season, begin treatment when honeydew appears. Demeton, parathion, malathion or methyl parathion may be combined with other sprays.
	B. Methyl parathion	0.25 – 0.375	
	C. Parathion[6]	0.25 – 0.375	
	D. Demeton (Systox)[2,7]	0.125 – 0.25	

LATE SEASON CONTROL PROGRAM (Insecticides listed at random)

INSECTS	INSECTICIDES	AMOUNT PER ACRE OF ACTUAL INSECTICIDE TO BE APPLIED AS DUST OR SPRAY	REMARKS
Bollworms	A. Strobane-DDT (2-1 mixture)	3.0 – 4.5	HOW TO CHECK FOR BOLLWORMS — Examine the terminal buds (upper 3 to 4 inches of the plant) of 100 cotton plants and 100 consecutive squares and bolls at each of several points in the field. Begin treatment when bollworm eggs and 4 to 5 young worms are found per 100 terminals or 5% of the small squares and bolls have been injured by small bollworms. Apply dusts or sprays at 5-day intervals.
	B. Endrin	0.4 – 0.5	
	C. Toxaphene-DDT (2-1 mixture)	3.0 – 4.5	
	D. Sevin	1.6 – 2.4	
	E. Endrin + DDT	0.3 – 0.4 + 0.5 – 1.0	
	Tobacco budworms occur in damaging numbers late in the season in some areas of the State. The maximum recommended dosages should be used to control this pest.		
Boll weevils	A. Sevin	1.6 – 2.4	HOW TO CHECK FOR BOLL WEEVILS — Examine cotton weekly. Pull 100 squares, at least ⅓ grown, at random, removing a few squares at several representative places in the field. If 15 to 25% or more have weevil punctures, begin treatment. Apply insecticides at 5-day intervals. Under extremely heavy buildups it may be necessary to shorten the interval to 3 days.
	B. Strobane-DDT (2-1 mixture)	3.0 – 4.5	
	C. Methyl Trithion	0.375 – 0.5	
	D. Methyl parathion	0.375 – 0.5	
	E. Endrin + DDT	0.3 – 0.4 + 0.5 – 1.0	
	F. Toxaphene-DDT (2-1 mixture)	3.0 – 4.5	
	G. Guthion	0.25	
	H. Calcium arsenate[2] (dust only)	10 – 15	
	Add one of the materials recommended for bollworms to Methyl Trithion, methyl parathion, Guthion, or calcium arsenate. Under conditions of heavy boll weevil infestations where it is desirable to reduce weevil numbers quickly, Methyl Trithion, methyl parathion or Guthion should be added to toxaphene-DDT, Strobane-DDT and endrin-DDT.		
Cotton aphids	Use insecticides as recommended for early season control.		
Spider mites	A. Trithion[2]	0.375 – 0.75	Treat when leaves begin to turn yellow. Demeton, Ethion or Trithion generally are more effective for controlling the two-spotted mite. Two applications at 5-day intervals may be necessary with all materials except demeton.
	B. Methyl parathion	0.25 – 0.375	
	C. Ethion[2,4]	0.375 – 0.75	
	D. Parathion	0.25	
	E. Demeton (Systox)	0.25	
Lygus and stink bugs	A. Toxaphene-DDT (2-1 mixture)	1.5 – 3.0	When 8 to 10 bugs are found per 100 squares or young bolls, begin treatment. Apply dusts or sprays at 7 to 10-day intervals.
	B. BHC-DDT (3-5 mixture)[2]	1.25	
	C. DDT	1.0	
Leafworms	A. Guthion	0.25	Apply dusts or sprays when cotton leafworms first appear and at 5-day intervals until control is obtained. Young worms are easier to kill than old worms. The BROWN COTTON LEAFWORM can be controlled effectively with parathion—0.125-0.25 lb.; malathion—0.35 lb.; or endrin—0.3 lb. per acre.
	B. Parathion	0.125 – 0.25	
	C. Sevin	1.0 – 1.25	
	D. Methyl parathion	0.125 – 0.25	
	E. Toxaphene-DDT (2-1 mixture)	1.5 – 3.0	
Cabbage loopers	A. Endrin	0.4 – 0.5	Begin treatment when small worms first appear.
Grasshoppers	A. Dieldrin	0.2	Apply insecticides when damaging infestations appear. Baits are preferred for control of "jumbo" grasshoppers. (See your county agent for bait mixture.)
	B. Aldrin[2]	0.25 – 0.375	
	C. Heptachlor	0.25 – 0.375	
	D. Toxaphene	1.5 – 3.0	
	E. Sevin	1.5 – 2.0	
Pink bollworms	A. Sevin	1.5 – 2.0	Apply insecticides at 5-day intervals. See text for additional information and how to make infestation counts for pink bollworms.
	B. DDT	1.5 – 2.0	
	C. Guthion + DDT	0.187 – 0.375 + 1.0 – 1.5	

[1]Dusts are effective, but sprays are considered more practical under early season conditions.
[2]Do not graze or feed treated plants to dairy animals or animals being finished for slaughter.
[3]Do not apply within one day of harvest. Do not pasture fields or feed gin waste if late applications are made.
[4]Do not apply after bolls open.
[5]Problems may be encountered in spraying wettable powder with low-volume farm sprayers; follow manufacturer's directions carefully.
[6]Do not apply within 5 days of hand picking.
[7]Do not apply within 21 days of harvest.